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Work Smarter Not Harder with Autodesk Revit Design Options

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BD31-4 Got Options? Learn how to save time and money from predesign through construction documentation, using the powerful Design Options feature in Autodesk Revit. In addition to tips and techniques, several real-world case studies will be presented, including residential production housing, multifamily housing, and commercial design.

About the Speaker:

Christopher is an associate with J. Randolph Parry Architects, PC, in Moorestown, New Jersey. Over the past 4 years, he has used Autodesk® Revit® to design and document everything from small retail interiors to large-scale multifamily apartment buildings. He is also a founding member and administrator of the Revit community and forums at augi.com. Chris received a B.S. in Environmental Design from the University of Massachusetts, Amherst, where he focused his studies on the use of computers in building and landscape design.

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Class Outline:

Brief Introduction to Design Options

Strategies for successful use

Real word examples

Design Option Tips and Tricks

Brief Introduction to Design Options:

So What are Design Options?

From the Revit help file: “*Design options provide a way to explore alternative designs in a project*”. This definition is really understating what design options can do. It should read: “Design options provide a way to explore alternative designs in a project, qualify, quantify and document those options,and make tons of money doing it”

Options and Option Sets, What’s the Difference?

“*Option Sets*” contain a group of options. An option set should be isolated to a specific area of the model or a specific task, where as “*Options*” contain model data that denotes optional condition. For example, an option set might be called “Front Elevation”, this option set might contain two options, like Standard Siding Exterior, and Brick Upgrade. The number of options within an option set is unlimited, however adding too many options to an option set can become confusing, so plan your are options wisely. Additionally all model elements that are not in an option set are considered to be in the “main model”.

Primary and Secondary Options

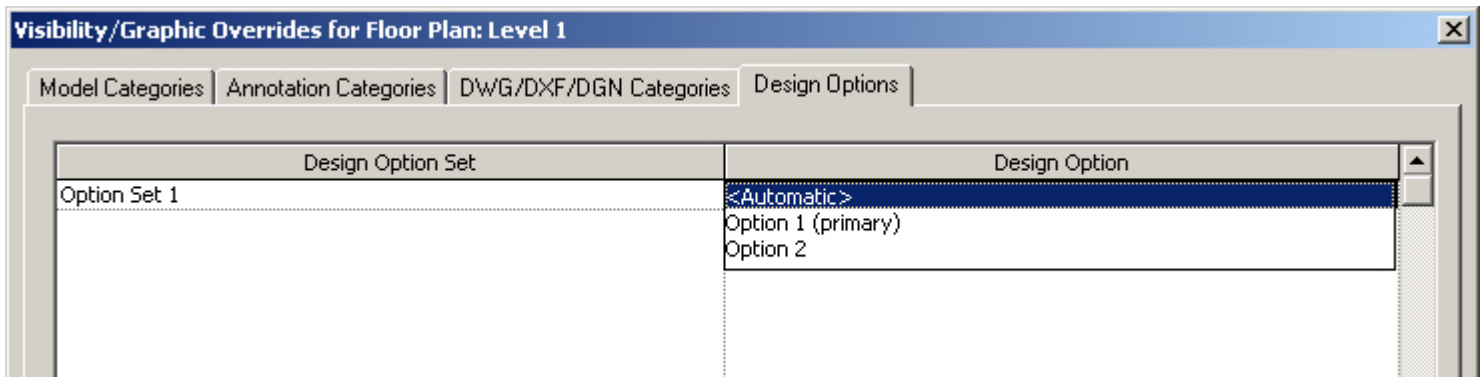
Primary options are considered the “favorite” option, they are displayed by default in all views. It is important to note that elements in the main model can reference elements in the primary option and elements in the primary option can reference elements in the main model.

Secondary options are any options in an option set that are not Primary. Elements in the main model can not reference objects in a secondary option. One place this can cause problems is with wall joins. For example walls in main model may only “clean up” properly with walls in the primary option. However adding additional walls to the option set will fix this issue. I will elaborate on this later in the presentation.

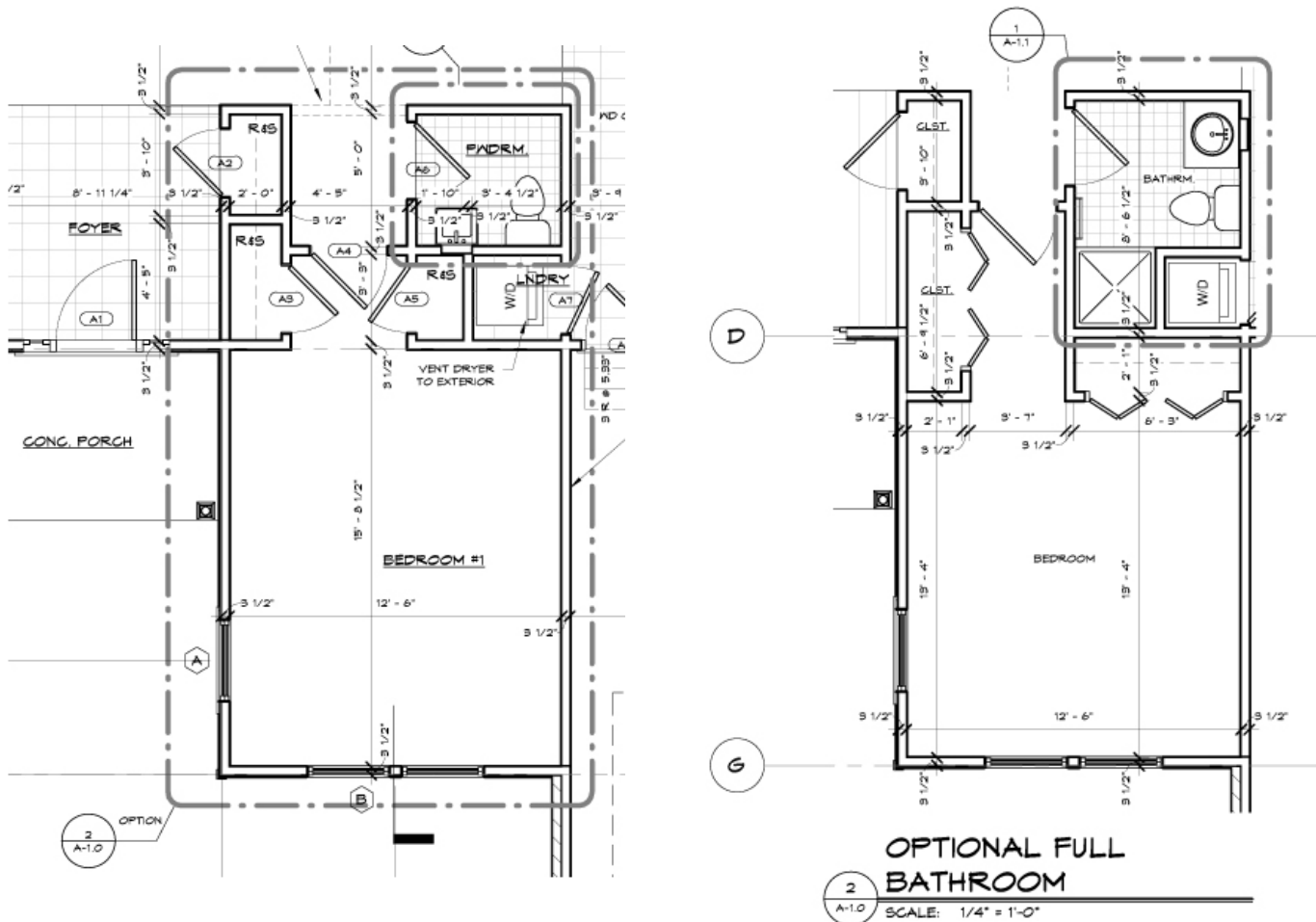
Secondary options can be displayed permanently using dedicated views. Any option can be promoted to “primary” at any time by using the make primary button.

Dedicated Views

You can use dedicate views to show a specific design option for each design option set, via the Design Options tab on the Visibility/Graphics dialog box. When the dedicated view is active or added to a sheet, the options you have dedicated are always shown along with the main model. When a view is set to “Automatic”, it will always display whatever option is designated “primary”



Example: Option Set: 1st Floor Bathroom



Option: Powder Room (Primary) **View:** Automatic

Option: Full Bath **View:** Full Bath

In the above example, the option set, 1st floor bathroom consists of two options, Powder Room (The primary option) and Full Bath, the secondary option. A dedicated view was used to display the secondary option.

Advantages to Using Design Options

It is no longer necessary for users to “Save-As” another file to explore different design directions. Developing a single location for all design data allows for better organization. The fear of going “too far down the wrong road” has been all but eliminated. It is very easy to fully document numerous options simultaneously, allowing design decisions to be made much later in the process when compared to traditional CAD

Strategies for Success

It's important to add only “what you need” to a Design Option Set. Revit design options draw their strength from their ability to share elements from the main model. Adding an entire model to a design option set can undermine their effectiveness

It is generally a good idea to avoid the temptation to start using design options from the start; Rather work in the “main model” for a long as possible. This approach is easier than having add multiple items to option sets later, a task that can be susceptible to user error.

I strongly recommend the team leader come up with a written design option strategy that describes the options, what elements should go where, and how they relate to worksets (if applicable). The appendix includes an example Design Option plan use for Real world example 3.

Real World Examples

Real World Example 1: Commercial Office Building

This is a simple of example of using revit's design options to document alternative exterior design schemes for a small medical office building. The developer was unsure of which entry design he preferred but still wanted us to stay “on schedule”.

Option #1



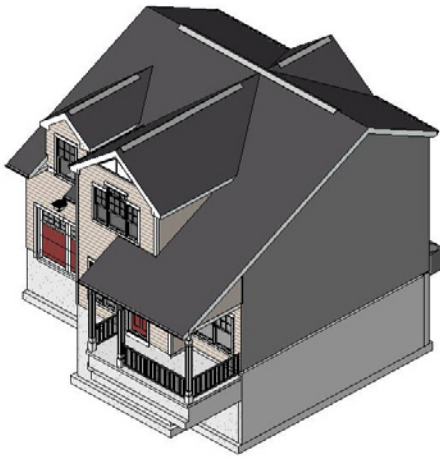
Option #2



Real world example 2: Multi-Family Housing

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This is a 46 unit moderate income condo project on the Delaware river in Southern New Jersey. The entire project is made up of just 3 master revit unit files that include several design options sets. These master unit files are linked into building file and are copied, mirror and arranged as necessary. Depending on their location in the building complex, the “exterior” option set was used to control “end unit” display. There is a limitation when working with design options and linked files: Linked files will only display the primary option, there no way to show secondary options in a linked file. To work around this, we created a dummy “end unit condition” file. In this dummy file we promoted the secondary “end unit option” to primary, then linked it in.



Standard Unit (Primary)



End Unit Condition

Real world example 3: Multi-Family Production Housing

This is a 609 unit 55 plus community on a 60 acre site in north east Philadelphia. The project consists of 36 town homes, 48 carriage homes, and five 105 unit apartment buildings. While we did use design options for each of these products, we will be focusing on the carriage homes in this example.

The building program consists of three different unit types A, B, C, (Aspen, Birch, Chestnut) that occupy 4 different positions (1,2,3,4) Buildings could be any combination of ABCA, ABBA, ACBA, or ACCA. Additionally each unit type had two options. The Aspen has a finished loft option and an optional basement. The Birch and Chestnut have a 3rd bedroom option and an optional finished basement.

There are also some significant site constraints. The grade dropped an average of 6 feet across buildings, which also varied according to its location on the site.

To solve this challenge, we created a single master revit file that depicted the most common grade condition. This master file accommodated all the of optional conditions, including the option basements. I have included our Design Option Strategy for this project in the appendix, The plan describes the design option and option set and what is included in each.

Having a single master revit file allowed us to show every single option in the job in one construction set for bidding purposes. Changes from bidding feedback could be added quickly “on the fly” as documentation continued. As the product sold and the buildings were finalized, the proper design options were “made primary”, we adjusted for the grade condition, the file was saved as and the construction set was issued. This process could be completed by one person in a matter of minutes or hours depending on the severity of the grade change!

Design Option Tips & Tricks

Use “copy” then “paste align same place” to copy element from one design option to another. For example; A new window was placed in the “standard elevation option” in a “exterior elevation option set”, use copy to same place to add that window to the “Brick elevation option” in same location.

If you are planning to show different floor finish options using design options, be sure to add the floor slab to the option set. The edit face command will not work inside a design option without including the host.

You can use a callout’s reference label to denote an optional condition. Create a new callout type called “option” and change the reference label to show OPT or OPTION. Use this callout with the “ref this view” option when creating the callout.

Appendix: Design option and Workset Strategy for Example 3

Project Notes for the Woods at Pine Valley (2/4/04)

Design Options

Design Option Set: Position 1 (Aspen Left)

Option: A-Standard (Primary)

This option contains the standard layout for the Aspen, it has a semi-finished second floor loft space.

Option: A-Opt. Finished Second Floor

Contains additional elements on the second floor that make up the second floor finished loft space. This option should also should the optional full bath on the first floor (this will effect the front bedroom and surrounding closets, laundry will also need to move)

Option: A-Opt. Basement

Contains standard layout, but also includes basement stairs, a complete basement interior layout, and any corresponding structure.

Option: A-Opt. Finished Second Floor & Basement

Contains additional elements on the second floor that make up the second floor finished loft space, and all of the basement layout, etc.

Design Option Set: Position 2 (The Birch, but can be a Chestnut.)

Option: B – Standard (primary)

This option contains the standard layout for the Birch, it has a finished second floor.

Option: B-Opt. 3rd Bedroom

Standard layout on the first floor, with additional elements on the 2nd floor that make up the 3rd bedroom.

Option: B-Opt. Basement

Contains standard layout, but also includes basement stairs, a complete basement interior layout, and any corresponding structure.

Option: B-Opt. 3rd Bedroom – Basement

Combination of both 3rd Bedroom and Basement options

Options: C-xxxxxx

These are the options for the instances that the Chestnut occupies position 2, see next option set for explanation.

Design Option Set: Position 3 (The Chestnut, but can be a Birch.)

Option: C – Standard (primary)

This option contains the standard layout for the Chestnut, it has a semi-finished second floor loft space.

Option: C-Opt. Finished Second Floor

Contains additional elements on the second floor that make up the second floor finished space.

Option: C-Opt. Basement

Contains standard layout, but also includes basement stairs, a complete basement interior layout, and any corresponding structure.

Option: C-Opt. Finished 2nd Floor – Basement

Combination of both Finished 2nd floor and Basement options.

Options: B-xxxxxx

These are the options for the instances that the Birch occupies position 3, see previous option set for explanation.

Design Option Set: Position 4 (Aspen Right)

Option: A-Standard (Primary)

This option contains the standard layout for the Aspen, it has a semi-finished second floor loft space.

Option: A-Opt. Finished Second Floor

Contains additional elements on the second floor that make up the second floor finished loft space. This option should also should the optional full bath on the first floor (this will effect the front bedroom and surrounding closets, laundry may also need to move)

Option: A-Opt. Basement

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Contains standard layout, but also includes basement stairs, a complete basement interior layout, and any corresponding structure.

Option: A-Opt. Finished Second Floor & Basement

Contains additional elements on the second floor that make up the second floor finished loft space, and all of the basement layout, etc.

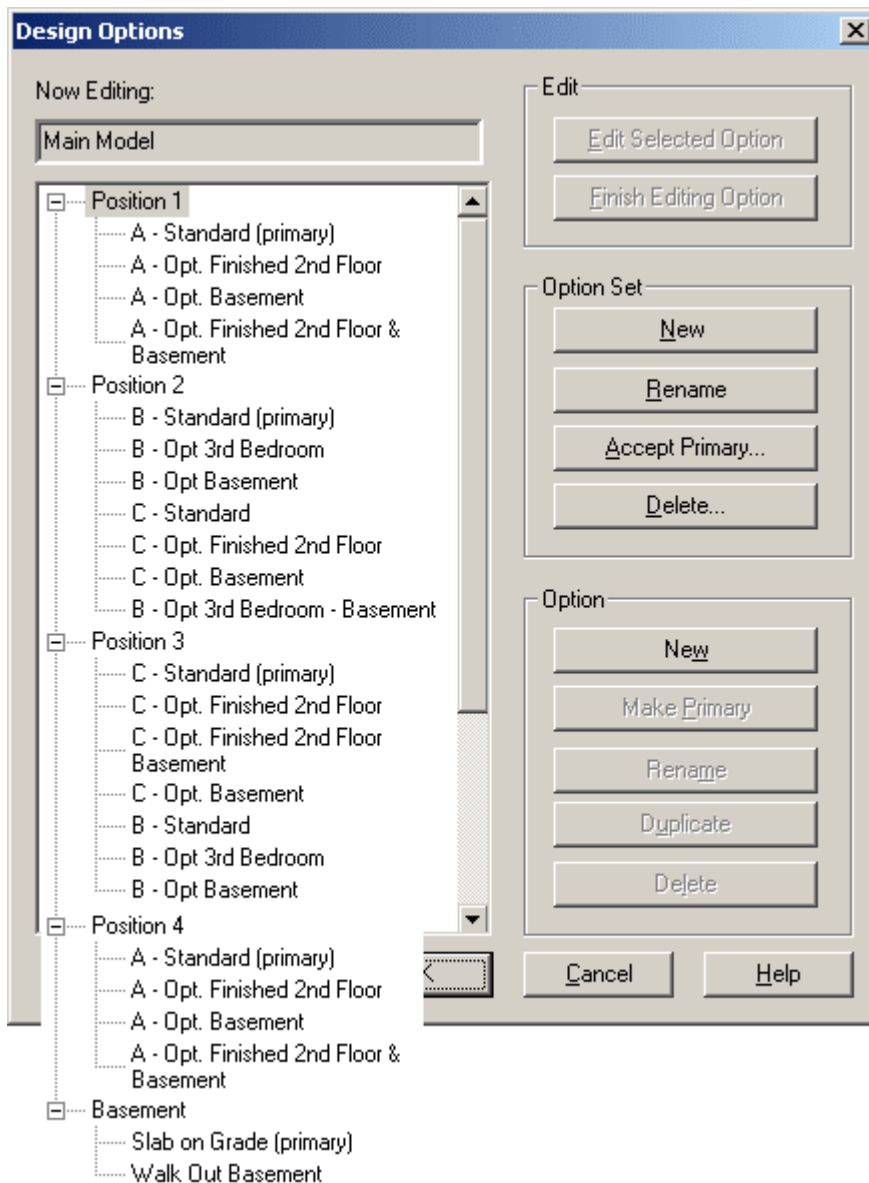
Design Option Set: Basements

Option: Slab on Grade (primary)

This option contains the standard foundation/footing layout for the slab on grade condition.

Option: Basement

This option contains the standard foundation/footing layout for the walk out basement condition. Should also include any windows or doors in the foundation walls.



Worksets

Exterior Shell – Should contain anything relating to the exterior of the building, windows, doors, etc, (except those that are part of the basement foundations)

Foundations – Should contain anything having to do with the foundations, including any doors or windows in basement options.

Interior Core – Should contain core elements, ie core walls.

Positions 1-4 – Should contain anything that has to do with the interior layout of each position respectively.

Shared Level and Grids – All levels and grids

